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PAPERS

IN

AGRICULTURE.

The GOLD MEDAL, *being the Premium offered in Class* 43, *for a* THRASHING MACHINE, *was this Session adjudged to* H. P. LEE, *Esq. of Maidenhead Thicket, from whom the following Communications were received. An Explanatory* ENGRAVING *is annexed, and a Model of the Machine is preserved in the Society's Repository.*

SIR,

I BEG leave to state to the Society of Arts, &c. the following particulars, relative to my attempts to improve the Thrashing Machine for Corn, and of my success therein.

Being largely concerned in agriculture, and having 800 acres of arable land, I found that a Thrashing Machine or two became absolutely necessary for the continuance of my occupations. I accordingly erected one of the kind recommended

mended to me; but from the complication of its structure, its being frequently out of order, and from its bad performance of the work at all times, I resolved to try to have a Thrashing Machine made under my own directions, more simple in its construction, and more efficacious in its operations. With this view I have continued my experiments for nearly three years, at an expense of about three hundred pounds, and have, at last, brought my machine to a degree of perfection which is satisfactory. Many gentlemen and farmers who have seen it and its operations, give it a decided preference to any they have seen, for the simplicity of its construction, for the cleanness of its thrashing, and for the quantity of corn thrashed by it, in proportion to the power applied.

I have no doubt but that the result of my original thoughts and experiments on this subject, will be of great advantage in this highly useful agricultural implement, and I have sent a model of the machine for the Society's inspection.

I am, Sir,

Your very obedient Servant,

H. P. LEE.

Maidenhead Thicket, *Dec.* 27, 1809.

To C. TAYLOR, M. D. SEC.

CERTIFICATES from Mr. EDWARD GREEN, of Bowlney, in Oxfordshire, and Mr. THOMAS MICHLEM, of Hurley, in Berkshire, stated, that they are largely concerned in the agricultural line; that they have seen a variety of Thrashing machines, but give the preference to those on Mr. Lee's principle, for the simplicity of their construction; that they highly approve of the manner in which they perform their work,

work, and that they consider them as calculated to thrash more corn, in proportion to the power applied, than any other they have seen.

CERTIFICATES from WILLIAM HUBBEARD, of Maidenhead Thicket; THOMAS WILLIAMS, of Feeres Farm, in White Waltham; JOSEPH LEE, of White Waltham, and RICHARD SILVER, of Maidenham Thicket, testified, that on the 27th February, 1810, Mr. Lee's Thrashing Machine did thrash in one hour and fifty-five minutes, eight quarters and three and a half bushels of barley; that the straw was thrashed clean and not broken, and the work was in all respects performed in a workmanlike manner.

A CERTIFICATE from JAMES WILLIS, foreman to Mr. Lee, stated, that on the 27th and 28th February, 1810, he did thrash thirty quarters of oats with Mr. Lee's machine, at Highway Farm, in the parish of Cookham, Berkshire.

SIR,

AFTER inspecting several Thrashing Machines by a variety of makers, I saw and examined your's, at Highway Farm, and was impressed with its superiority over every other that I had seen, both on account of its simplicity and effect. I applied to Wright, your builder, who has erected one for me upon your improved principle, which effectually thrashes wheat and barley clean, without injuring the straw, and very much to my satisfaction. I have not hitherto had an opportunity of ascertaining its powers with other grain, but am happy to assure you, that I consider your improvements to constitute a material step towards perfecting an

instrument of the first consequence to the agricultural interests of this kingdom, and highly deserving our warmest acknowledgments.

I have the honor to subscribe myself, Sir,

Your obliged humble Servant,

SAMUEL NICHOLLS, M. D.

Hinton House, Twyford, Berks,
March 1, 1810.

To H. P. LEE, Esq.

A CERTIFICATE from Mr. G. H. CRUTCHLEY, of Sunning Hill Park, Berks, dated March 3, 1810, stated, that he had seen Mr. Lee's Thrashing Machine at work; that it thrashed clean, and pleased him so well that he had ordered one on the same principle.

By subsequent letters received from Dr. Nicholls and Mr. G H. Crutchley, the above Certificates were confirmed by them, with additional testimonies in favor of Mr. Lee's machines.

Mr. Lee, in his attendance on the Committee appointed by the Society for the examination of the merits of his machine, stated, That his machine requires no rollers for entering the corn to be thrashed.

That it is about three feet diameter, and about two feet six inches in length.

That two horses are quite sufficient to work it; that from half-past seven to two o'clock they will, without fatigue, thrash two loads of wheat, each of forty bushels.

That he thinks the straw is not so much broke as with other machines.

That the vanes within the cylinder turn from one hundred

to

to one hundred and twenty times round for one round of the horses, in a space of twenty-two feet diameter.

That there are four vanes within the drum or cylinder, each vane one inch and a half thick, and inclosed to within about three inches of their exterior edges; that the drum or cylinder, within which the vanes turn, is close-fluted with wood of about an inch thick, and is in moveable parts, so as to admit of being placed nearer to, or further from, the vanes, as the corn to be thrashed may require.

That he has erected two of those machines on his estate, and has used them for three years.

A note sent to the Society by William Wright, of Henley-upon-Thames, Oxfordshire, the maker, states, that the price of a thrashing machine on this principle, including the horse-wheel, is forty-eight pounds, at his manufactory there.

Reference to the Engraving of Mr. Lee's Thrashing-Machine, Pl. 1. Fig. 1 and 2.

Fig. 1 and 2 are a side and end-view of the machine; A, in both figures, represents the framing of the machine; B is the shaft of a cog-wheel C, which is turned by cog-wheels, from the great horse-wheel, in the same manner as the ordinary thrashing mill; the cog-wheel C turns a small pinion D, to which it gives a rapid revolution; on the axis of the pinion, the beaters EE are fixed, and revolve with it, within a segment or drum, formed of iron plates, grooved or ribbed, parallel to the axis, as the figure represents, and connected together by wooden curbs FF, to which they are screwed. *a a* is the feeding board upon which the corn is placed to enter the machine. The end of this board is fixed very near to the four vanes, or beaters, *b b b b*; as these revolve

rapidly they strike the heads of the corn upwards, with such a jerk as to beat out all the corn from those ears which they meet fairly; but if any escape they are drawn in, together with the straw, and rubbed round by the beaters against the inside of the ribbed drum, or cylinder, F, so as to open the ears and let out the corn, though the ears come in any position whatever. At H is a grating, upon which the beaters deliver the corn, chaff, and straw altogether; the two former fall through upon the ground at X, and the latter slides down on the grate; the corn is afterwards to be dressed in a winnowing machine, which separates the light and heavy corn from the chaff The curbs F are fixed by screws, which can be adjusted so as to bring the cylinder nearer, or farther from, the beaters, to adapt the machine for thrashing different kinds of grain, for it is evident that large corn, as peas, beans, &c, must require more space to rub them in than the smaller grain, as wheat and barley. L, fig. 1, is one of the uprights of the frame which supports the bearing for the axis B of the cog-wheel; and M is an oblique brace, which strengthens the frame. N is the stage on which the man who feeds the machine stands.

The GOLD MEDAL *of the Society was this Session adjudged to* THOMAS JOHNES, *Esq. M. P. of Hafod, in Cardiganshire, for his Plantations of Larch and other Trees, and from whom the following Communications were received.*

DEAR SIR,

INCLOSED is a certificate from the Rev. Mr. Evans, which I only received this morning, and hope it will prove satisfactory

Mr. Lee's Thrashing Machine.

Fig. 1.

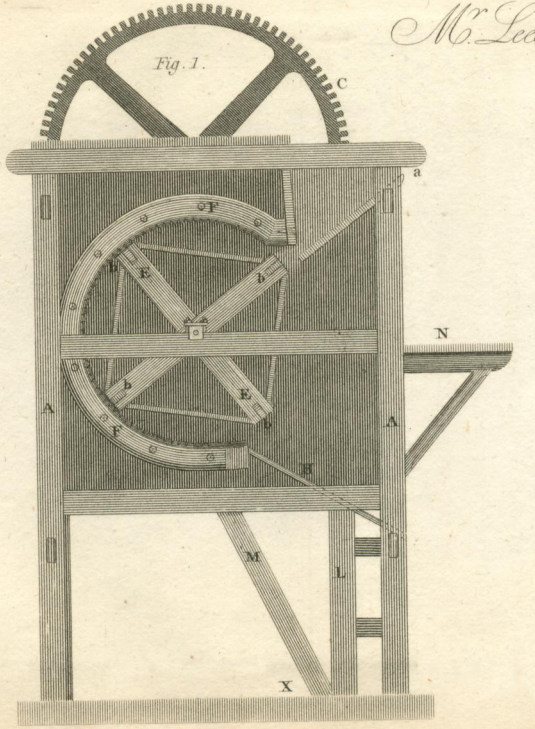
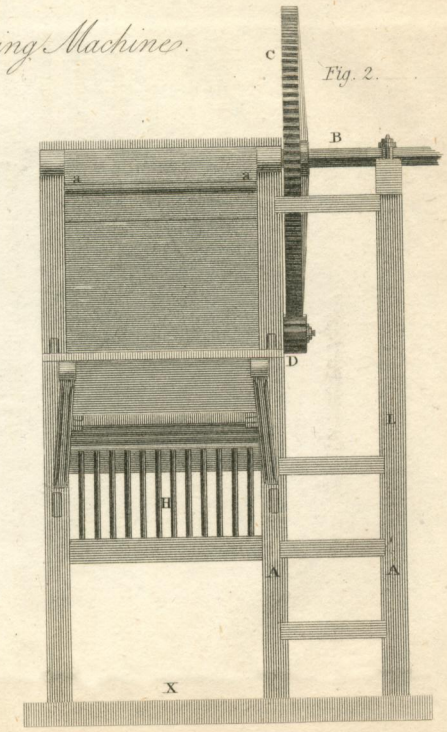


Fig. 2.



Drawn by J. Farey Jun.r

Engraved by S. Porter

factory in establishing my claim upon the Society for the plantations therein specified.

I remain, Dear Sir,

Your's, very truly,

THOMAS JOHNES.

Castle Hill, Dec. 20, 1809.

To C. TAYLOR, M. D. SEC.

This is to certify, that Thomas Johnes, Esq., has planted three hundred thousand larch trees, thirty thousand beech, and ten thousand spruce firs, on Hafod demesne, in the chapelry of Eglwys-Newydd, in the parish of Llanfihangel-y-Croydelyn, in the county of Cardigan, between the 24th of June, 1806, and the 24th of June, 1807, on such lands as are not calculated for the purpose of husbandry, because the grounds cannot be ploughed in consequence of their being so very uneven, the soil very shallow and stony, and the situation altogether steep and high, and having a northern aspect.

The above plantations are well fenced on the side next the public road, by a stone wall five feet high, and the same coped with sods of turf of a foot high thereon; and on the other side by a common mound or bank five feet high, with a dry hedge on the top of the same from a foot and a half to two feet high. The whole fence on both sides is constantly attended to and kept in good repair. The trees have not suffered any injury hitherto from sheep or any other cattle. They appear healthy and thrive as well as can be expected.

Witness our hands this 18th day of December, 1809.

LEWIS EVANS, Minister of Eglwys-Newydd, aforesaid.
JOHN GREENSHILDS, Bailiff and Planter.

DEAR SIR,

INCLOSED I send, at your request, the original report made to me by my bailiff of the height and girth of some of my plantations; but it is not so accurate as I could wish, as all the memoranda I had made of planting had been destroyed by the fire here.

I am, my Dear Sir,

Your's always,

T. JOHNES.

Hafod, Nov. 1, 1810.

To C. TAYLOR, M. D. SEC.

Girths of larch trees in different plantations belonging to Thomas Johnes, Esq. of Hafod, in Cardiganshire, taken by John Greenshilds, at six feet from the ground, with the supposed dates of the time when planted.

	Girth.
Plantations by Bakehouse, planted in 1782 . . .	21 Inches.
———, Pwllpiran, 3 feet trees when transplanted, now 14 years old	16
———, ditto, Hill, 1802, 12 and 15 inches . .	12
——— above the Church, 1782, ...	21
———, Roundabout Field, 1785, ...	18
——— opposite the new farm, 1808, 4 feet high . .	3

A tree growing near the house, which was brought here from Herefordshire, in a pot, by Mr. Painter, in 1772 or 1773, is now 7 feet 4 inches girth. A tree fronting the Conservatory was transplanted at five feet high in 1780, is now 3 feet 1 inch girth.

The

The GOLD MEDAL *of the Society, being the Premium offered Class* 54, *for Experiments on Stall-feeding of Cattle, was this Session adjudged to* JOHN CHRISTIAN CURWEN, *Esq. M. P. of Workington-Hall, Cumberland, from whom the following Communications were received.*

DEAR SIR,

THE following experiments were made in feeding two-year-old heifers for the space of twelve months, from the 1st of October, 1808, to the last day of September, 1809, with a view of ascertaining the early maturity and propensity to fatten of the various breeds:—viz. two Herefords, two Short-horned, two Galloways, two Glamorgans, two Long-horned, and two of the Sussex breed. Devons could not be procured that could be warranted not to be in calf, and one of the Sussex was obliged to be discontinued in the experiment on that account.

The different specimens of the breeds were tolerably good; it is not to be expected that breeders will part with their most promising stock.

The whole were collected some time previous to the commencement of the experiment, in order that those which came from a distance might recover from the effects of driving. Except once a fortnight, to be weighed, they were never out. They continued, almost without exception, in perfect health during the whole time. From the difference which has occurred in feeding between the specimens of the same breed, without any superiority of the animal, it will be apparent that numerous experiments must

be

be made before any decisive judgment can be formed as to the superiority of one stock over another.

I am disposed to believe, that in order to obtain a satisfactory result, the experiment must commence with the dropping of the calf, as the most material difference will be made in the mode of feeding for the first few months.

The food was accurately weighed three times a week to each class. After some little time there was found to exist so little difference between the consumption of the animals of the same breed, that a separate account between them was discontinued. The same quantity of food is therefore supposed to be consumed by each.

Though the experiment fails in deciding the superiority of one stock over another, yet it will, I apprehend, afford some very desirable information as to the consumption of food and increase of weight. It will be found to furnish the most incontestible proof in favor of soiling or stall-feeding, and remove every doubt which may have been entertained of its being injurious to the health of cattle. The two Hereford and Sussex were purchased for the purpose of breeding from, and have since been turned out to reduce their condition, and are at this date perfectly well.

I think it will appear evident that expensive food cannot be given to cattle with any prospect of a return of profit.

The mode which I have taken of calculating the profit upon the respective breeds, may be subject to objection, as some animals gain weight in carcase, others in inside fat; it is however the only way which I could devise.

The continued moisture and want of sun during the months of August and September, operated much against the cattle; most of them will be found to have lost weight for one fortnight; and I doubt not they gained less than they would have done in a more favorable year. The clover, from

from too great moisture, appears to have been deprived of much of its nutritious quality.

I have offered no estimate as to the worth of the manure, the quantity depending so much upon the value of straw. When it sells from two-pence to three-pence per stone, as little is used as can be avoided.

I have no hesitation in giving it as my opinion, that the manure will do greatly more than pay for all expenses of attendance, procuring food, &c. The urine may be turned to the most profitable account by preserving it and pumping it upon earth. Prodigious quantities of the most valuable manure may be made by this method. In a system of two shifts, which I am pursuing, I place my reliance on this resource for two or three thousand tons of manure annually.

The health and progress of the cattle in fattening are greatly dependent upon their being kept perfectly clean. Occasionally the whole were washed with black soap and water, and thus were prevented all irritation of the skin and loss of hair.

The food of the cattle, for the first few weeks, consisted of carrot and turnip-tops, then the common turnip, afterwards the Swedish; this was succeeded by cole, which lasted till the 10th of June; afterwards clover. An allowance of straw with a small portion of boiled chaff was given occasionally. For the last month, a few pounds of oil-cake were given daily. Turnips were valued at three half-pence per stone; clover at one penny. The expense of feeding was most commonly under six-pence per day.

The value of the land from whence the produce was drawn may be estimated at forty shillings per acre. A deduction from the supposed profit must be made for risk, capital, and taking to market.

The gain of animals in weight will not be found to be governed

governed by size:—For instance, the short-horned, which exceeded one third in size some of the other specimens, do not gain in daily increase more than lesser animals. Small animals consume less food, but the improvement upon the original weight will give the preponderance to the larger animals, supposing an equal aptitude to fatten.

The little experience I have had in stock, precludes my offering any opinion of my own. I shall be happy to afford the Society any further information or explanation they may wish.

I have the honor to be, Dear Sir,

Your obedient humble Servant,

J. C. CURWEN.

Workington, Dec. 2, 1809.

To C. TAYLOR, M. D. SEC.

P. S. I shall have the honor of submitting to the Society the result of my experiments on earth, saturated with urine, as a substitute for manure.

A CERTIFICATE was received from THOMAS THOMPSON, Bailiff to Mr. Curwen, confirming the correctness of the annexed account of the respective weights of the experimental cattle fed at the Schoose Farm from the 1st of October, 1808, to the 30th of September, 1809.

A CERTIFICATE was received from WILLIAM GLOVER, Head-feeder of milch cows at Schoose Farm, confirming the accuracy of the annexed account from Mr. Curwen, respecting the quantity of food given to the various experimental cattle fed at the Schoose Farm from the 1st of October, 1808, to the last day of September, 1809, and that it was regularly entered and weighed by him.

ACCOUNT

ACCOUNT FROM J. C. CU

OF

The Food consumed, and of the respective Weights of the

FROM OCTOBER 1, 1808, TO SEP

WITH THE PROFITS ON

	Weight, Oct. 1, 1808.	Weight gained Sept. 30, 1809.	Consumption of Green Food by each.	Consumption of Straw, Chaff, &c. by each.	Consumption of Oil-cake.	Quantity of Water by each.	Daily increase of Weight.	Green Food consumed for the gain of each lb.
	St. lb.	St. lb.	St. lb.	St. lb.	St. lb.	Gal. Qts.	Oz.	St. lb.
No. 1.	64 0	22 0					13	7 5½
HEREFORD.			2,265 12	191 8	6 6	25 1		
No. 2.	61 7	28 7					17½	5 10¾
No. 1.	78 7	25 7			6 6		15½	6 9
SHORT-HORNED.			2,362 1	187 12		28 3		
No. 2.	90 0	25 0			0 0		15	6 10
No. 1.	61 7	24 7					15	6 11

OM J. C. CURWEN, ESQ.

OF

eights of the Experimental Cattle fed at the Schoose Farm,

, 1808, TO SEPTEMBER 30, 1809;

THE PROFITS ON EACH.

[*To face page* 36.

ily increase of eight.	Green Food consumed for the gain of each lb.	Dry Food consumed for the gain of each lb.	Cost of Food.	Cost of each lb. gained.	Profit.	
)z.	St. lb.	lb.	£. s. d.	d.	£ s. d.	£ s. d.
						No. 1.—64st. at 4*s*. . 12 16 0
						Expense of Food . . 7 18 8
3	7 5½	8¾		6	5 1 4	20 14 8
						86st. at 6*s*. . . 25 16 0
						Profit 5 1 4
			7 18 8			
						No. 2.—61st. 7lb. at 4*s*. 12 6 0
						Expense of Food . . 7 18 8
7½	5 10¾	7½		4¾	6 15 4	20 4 8
						90st. at 6*s*. . . 27 0 0
						Profit 6 15 4
						No. 1.—78st. 7lb. at 4*s*. 15 14 0
						Expense of Food . 8 3 9½
5½	6 9	8	8 3 9½	5½	7 6 2½	23 17 9½
						104st. at 6*s*. . . 31 4 0
						Profit 7 6 2½
						No. 2.—90st. at 4*s*. . 18 0 0
						Expense of Food . 7 11 3½
5	6 10	8½	7 11 3½	5	8 18 8½	25 11 3½
						115st. at 6*s*. . . 34 10 0
						Profit 8 18 8½
						No. 1.—61st. 7lb. at 4*s*. 12 6 0
						Expense of Food . 7 19 7
5	6 11	8½		5½	5 10 5	20 5 7
						80st. at 6*s*. . . 25 16 0
						Profit 5 10 5
			7 19 7			

No. 1.	61 7	24 7	2,307 0	186 12	6 6	26 0	15	6 11
GLAMORGAN								
No. 2.	52 7	20 7					13½	8 0
No. 1.	54 0	17 0	2,174 12	186 8	6 6	23 3	10	9 0
GALLOWAY.								
No. 2.	54 0	22 0					13½	7 0
No. 1.	76 0	18 0	2,368 0	169 0	6 6	31 2	11	9 6
LONG-HORNED.								
No. 2.	74 7	21 7					13	7 8
SUSSEX.	69 0	18 0	2,268 2	107 8	0 0	21 0	11	9 0

						No. 1.—61st. 7lb. at 4s. 12 0 0 Expense of Food . 7 19 7
5	6 11	3½	7 19 7	5½	5 10 5	20 5 7 86st. at 6s. . . 25 16 0 Profit 5 10 5
2½	8 0	10¼		6½	3 8 5	No. 2.—52st. 7lb. at 4s. 10 10 0 Expense of Food . 7 19 7 18 19 7 73st. at 6s. . . 21 18 0 Profit 3 8 5
0	9 0	12½	7 13 5¼	7½	2 16 6¾	No. 1.—54st. at 4s. . 10 16 0 Expense of Food . 7 13 5¼ 18 9 5¼ When sold, 71st. at 6s. 21 6 0 Profit 2 16 6¾
3½	7 0	9		6	4 6 6¾	No. 2.—54st. at 4s. . 10 16 0 Expense of Food . 7 13 5¼ 18 9 5¼ 76st. at 6s. . . 22 16 0 Profit 4 6 6¾
11	9 6	10½	8 0 2¼	7¾	4 19 9¾	No 1.—76st. at 4s. . 15 4 0 Expense of Food . 8 0 2¼ 23 4 2¼ 94st. at 6s. . . 28 4 0 Profit 4 19 9¾
13	7 8	8¾		6¼	5 17 9¾	No. 2.—74st. 7lb. at 4s. 14 18 0 Expense of Food . 8 0 2¼ 22 18 2¼ 96st. at 6s. . . 28 16 0 Profit 5 17 9¾
11	9 0	6¾	6 14 5	6¼	5 11 7	69st. at 4s. . . 13 16 0 Expense of Food . 6 14 5 20 10 5 87st. at 6s. . . 26 2 0 Profit 5 11 7

Account from J. C. CURWEN, *Esq. of the Gain and Loss in Weig*
Farm, upon the different Green Food, from Oc

	Carrot-tops, Food for Twenty-nine Days.			Turnip-tops, Food for Thirty-seven Days.			Turnips, Food for Ninety-two Days.		Swe Thir
	Total Gain.	Daily.	Loss.	Total Gain.	Daily.	Loss.	Total Gain.	Daily.	Total
	St. lb. oz.	lb. oz.	St.	St. lb. oz.	lb. oz.	lb. oz.	St. lb. oz.	lb. oz.	St. l
No. 1.	2 0 0	0 15½	—	0 9 6	0 4	—	5 10 0	0 13¾	1
HEREFORD.									
No. 2.	5 7 0	2 10½	—	—	—	8 6	8 3 4	1 4	0 1
No. 1.	—	—	3	2 7 6	0 15	—	4 8 0	0 11	1
SHORT-HORNED.									
No. 2.	—	—	2½	0 6 8	0 2¾	—	7 9 0	1 2¾	4
SUSSEX.	—	—	3	3 12 0	1 7¼	—	5 10 0	0 14	2
No. 1.	2 0 0	0 15½	—	—	—	9 0	4 0 0	0 9½	1 1
LONG-HORNED.									
No. 2.	1 7 0	0 11½	—	—	—	9 0	5 13 0	0 14½	2
No. 1.	1 7 0	0 11½	—	4 0 0	1 8	—	5 8 0	0 13½	3
GLAMORGAN.									
No. 2.	1 7 0	0 11½	—	1 10 0	0 10¼	—	5 5 0	0 13	3
No. 1.	—	—	—	1 7 0	0 9	—	2 7 0	0 6	3
GALLOWAY.									
No. 2.	1 7 0	0 11½	—	3 7 0	1 5	—	7 7 0	1 2¼	2

*** It must be observed, that for one fortnight all the Cattle lost weight on Clover, owing to
of September, there was sca

Loss in Weight from feeding the Experimental Cattle at the Schoose ood, from October 1, 1808, to September 30, 1809.

ips, Food for ty-two Days.		Swedes, Food for Thirty-two Days.		Cole-plants, for Fifty-nine Days.			Grass, for Twenty-eight Days.		Clover, for Eighty-eight Days.	
Gain.	Daily.	Total Gain.	Daily.	Total Gain.	Daily.	Loss.	Total Gain.	Daily.	Total Gain.	Daily.
lb. oz.	lb. oz.	St. lb. oz.	lb. oz.	St. lb. oz.	lb. oz.	lb. oz.	St. lb. oz.	lb. oz.	St. lb. oz	lb. oz.
0 0	0 13¾	1 9 0	0 11½	4 9 10	1 1¾	—	2 3 0	1 1½	4 6 0	0 1¼
3 4	1 4	0 11 0	0 5½	3 7 0	1 11¼	—	2 10 0	1 0½	5 8 0	0 14
8 0	0 11	1 0 0	0 7	4 6 0	1 0¾	—	6 4 0	3 2¼	4 9 0	0 13
9 0	1 2¾	4 0 0	1 12	3 12 0	0 14½	—	2 4 0	1 2¼	4 0 0	0 10
0 0	0 14	2 2 0	0 15	3 2 8	0 12	—	1 10 0	0 13½	3 0 0	0 7¾
0 0	0 9½	1 10 0	0 12	1 2 0	0 4¼	—	2 11 0	1 6	4 9 0	0 13
3 0	0 14½	2 2 0	0 15	—	—	7 0	4 12 8	2 6¾	5 13 8	0 15
8 0	0 13½	3 6 0	1 8	1 12 8	0 7	—	4 2 0	2 1	3 9 0	0 8
5 0	0 13	3 6 0	1 8	3 3 0	0 12	—	3 7 0	1 12	3 0 0	0 7¾
7 0	0 6	3 0 0	1 5	3 7 0	0 13	—	2 0 0	1 0	1 0 0	0 2½
7 0	1 2¼	2 0 0	0 14	4 0 0	0 15	—	3 0 0	1 8	4 0 0	0 10

Clover, owing to its being deprived of nutrition from wet. From the 14th of July to the last nber, there was scarce a dry day.

The SILVER MEDAL *of the Society was this Session voted to* J. BERNEY PETRE, *Esq. of Westwich-House, Norfolk, for extensive Plantations of Pinaster Fir Trees. The following Communications on this Subject, and on Plantations of Chamomile, were received from him, and a fine Specimen of the Timber of the Pinaster is preserved in the Society's Repository.*

GENTLEMEN,

HAVING been a planter of firs and forest-trees for more than fifty years, upon a large scale, my friends have often solicited me to lay the particulars before your Society, as few in this kingdom have exceeded me in this pursuit. I am at length induced to lay my labours before you in the following statement:—About thirty years ago I planted in my park, and on the heath adjoining, about two hundred acres with different trees; the soil of the latter was so poor that the Scotch firs, which I chiefly appropriated to that place, died after having been planted fifteen years, owing to the poverty of the soil and their exposed situation. The pinaster, or Chester pine, has always been a favorite tree with me for the beauty of its foliage and goodness of the timber. I have in my groves I believe some of the finest in the kingdom, estimated by Mr. Nathaniel Kent, of Craig's-court, a member of your Society, as containing five loads of timber in a tree, and upwards of eighty feet high; it therefore occurred to me to raise some young plants from them, and when these plants were two years old, I filled up with these young pinasters the vacancies occasioned by the death of the Scotch firs, and though

though planted sixteen years after them, they are now by far the largest and handsomest trees. A very few years since, upon observing the rapid growth of these trees, I was induced to enlarge my plantations, and took into my park two hundred acres more, which I planted entirely with pinasters, except in the vallies where other trees grow: my pinaster plants were all raised from my own seed; and this year their progress has been astonishing, and they are the admiration of all persons who have seen them.

I am preparing to add another hundred acres, and have raised above two hundred thousand plants for that purpose. I shall then have a plantation of five hundred acres, with a five-mile drive through it. When I finished my second planting, about three years since, I found there was nearly forty thousand plants left, and as at that time I did not mean to extend my plantations, I thought it was a pity that such valuable plants should be wasted. I therefore agreed with one of my gardeners to dispose of them, and a friend in London took upon himself the trouble. There was an immediate demand for three times the number, and some were sent to Scotland, Ireland and Wales; in consequence of which, I last winter ordered as much seed to be gathered and picked out by poor women and children, in my parish, as cost me upwards of twelve pounds. I have, therefore, raised plants sufficient for all my purposes, and I have I suppose two hundred thousand to spare, which, I have no doubt, will be applied for in the spring. I likewise, some years since, established a large chamomile-ground, I believe the first in Norfolk, and is thought a very laudable pursuit, as it employs the poor of my parish from July till November, and some children will earn, by gathering the flowers only in the middle of the day, from sixpence to ninepence each.

Before I conclude this paper, I beg leave to mention the quick

quick growth of a Spanish chesnut-tree, which I planted, a very small one, twenty-nine years ago last spring, and which now measures near six feet round the body of the tree, at two feet above the ground.

The Rev. St. John Priest, the Secretary to the Norfolk Agricultural Society, has viewed most of my improvements.

I am, with respect, Gentlemen,

Your most obedient Servant,

J. BERNEY PETRE.

Westwich House, Norfolk, Dec. 1, 1809.

To the Society of Arts, &c.

CERTIFICATES.

A letter from the Rev. ST. JOHN PRIEST, Secretary to the Norfolk Agricultural Society, dated Scarning, near East Durham, Norfolk, December 4, 1809, accompanied and confirmed Mr. Petre's statement.

We, the undersigned, being resident at North Walsham, the adjoining parish to Westwich, in the County of Norfolk, have frequent and even constant opportunities of observing and admiring the plantations and improvements of John Berney Petre, Esq., upon his estate there; and having seen the account which he has transmitted to the Society of Arts, &c. of the extent and progress of the same, as well as of his extensive and flourishing chamomile ground, and the benefit and employment furnished by them to the poor, or inhabitants of the neighbourhood, can assure the gentlemen of the Society, that we have no doubt whatever of the correctness of the above-mentioned account which Mr. Petre has

has caused to be laid before them, and that, in our judgment, it appears to fall short of the reality, rather than exceed it.

THOMAS LLOYD, Rector of Westwich, and one of his Majesty's Justices of the Peace for the County.

T. H. COOPER, one of his Majesty's Justices of the Peace for the County of Norfolk.

North Walsham, Dec. 20, 1809.

DEAR SIR,

I AM favoured with your queries, and shall be very happy to give any information in my power concerning the cultivation and nature of the pinaster; I should have had great fears in doing it, had not the latter part of your letter held out some encouragement, being well assured that my observations would not be correct enough for public inspection; I shall therefore just answer your questions as you have placed them. The first of which is, respecting the method of getting out the pinaster seed from the cones;—It is done in the winter by women and children: they put the cones in boiling water, just sufficient to soften the turpentine, and *immediately* upon their beginning to snap they should be taken out, otherwise the water gets to the seed, and injures it; they then strip off every knob separate, with the point of a knife, by which means they easily come at the seed, and by rubbing it well with their hands they quickly break off what surrounds it, which blows from the seed, and leaves that quite clean. I pay them a shilling a pint for it well dressed, including the gathering the cones. I sow them in beds

beds of good mould, not rich, but sifted fine, any time in April, according to the season. I cover them with *sifted* mould, about half an inch thick. I likewise sow the seeds pretty thick, and let them remain a year in the seed-bed; I then plant them out in the nursery-beds, in rows about four inches asunder, and about two inches wide in the rows; the year following they may be planted out for good. This ought to be particularly attended to, for if they remain longer in the nursery-beds than one year, they will draw up weak, and not grow. As to the soil, they will grow on any. I have plants that have made shoots of five feet in two years, where the soil is a bleak, heathy sand at top, and gets down either to a hard strong gravel, or a dead yellow sand; and where they are planted on the declivity of a hill, I have seen the main roots so fleet that they have come out of the surface, and struck in again, two or three feet down the hill, if steep. Having been in the habit of planting pinasters for upwards of forty years, you may justly presume I have them of all sizes. The pinasters, on the above-mentioned poor soil, have been planted about nine years, they measure from ten to twenty inches round, and I have many in my older plantations, that measure from three to four feet round, and their height upwards of forty. The pinasters are planted at such unequal distances, that I do not think the ground could, with any accuracy, be measured so as to ascertain what quantity of timber of the medium growth an acre would contain; but according to my opinion, pinasters planted about seven feet from each other, might stand without being thinned, till they measure from two to three feet in circumference. Those pinasters which Mr. Kent estimated at near five loads of timber in a tree, were planted in the year 1702. The largest are about ten feet in circumference; three feet above the ground they diminish

very gradually, till they get near the top. One I lately felled did not run the length that some of them do; it measured ten feet round at the bottom, eight feet in the middle, and about six where the arms divided at the end of the body. If any of the above observations should be of the least service in forwarding your next publication, I shall be highly gratified, and should any fresh occur, will with much pleasure communicate them.

I remain, Sir,

Your obliged and obedient Servant,

J. BERNEY PETRE.

Westwich House, July 13, 1810.

To C. Taylor, M. D. Sec.

The Gold Medal *of the Society, being the Premium offered in Class* 34, *was this Session adjudged to* J. Stockdale, *Esq. of Cark, in Lancashire, and* R. Towers, *Esq. of Duddon Grove, in Cumberland, for gaining upwards of Five Hundred and Sixty-four Acres of Land from the Sea, at Windermoor, in Lancashire. The following Communications were received from them.*

SIR,

Having observed that the Society for the Encouragement of Arts, Manufactures, and Commerce, had this year offered their Gold Medal as a premium to the person who should gain the greatest quantity of land from the sea, I take the liberty

liberty of transmitting to you the inclosed particulars, and sketch of an embankment, erected by Mr. Stockdale and myself; and should the Society vote us their Medal for the same, we shall think ourselves highly honoured.

I am, (for Mr. Stockdale and Self) Sir,
Your most obedient humble Servant,

RICHARD TOWERS.

Duddon Grove, near Ulveston,
Nov. 18, 1809.

To C. TAYLOR, M. D. SEC.

STATEMENT.

Early in the spring, 1807, James Stockdale, of Cark, in the parish of Cartmel, Lancashire, and Richard Towers, of Duddon Grove, in the County of Cumberland, Esquires, employed Mr. Henry Harrison, of Chester, to erect an embankment to inclose a parcel of marsh ground, situate in the parish of Cartmel, called Windermoor, a considerable part of which was covered with salt water every spring-tide, and the whole overflowed several times during the year.

The embankment is about four thousand seven hundred and fourteen yards in length, in some places fourteen feet perpendicular height; in others, not more than six feet high: the outside of the embankment is in general upon a slope of five feet horizontal, to one foot perpendicular; but in many places is run out to a slope of seven to one, where the embankment is highest; four feet wide at top; inside slope two to one, or two feet horizontal to one foot perpendicular; so that where the embankment is fourteen feet in height, and put out to the greatest slope, the base will be one hundred and thirty feet; the whole covered with marsh sod, four inches in thickness on the outside, and two inches on the inside the embankment.

Inside of the embankment is a water ditch to carry off the surface water, and let out at one end by a culvert, faced with stone, four feet broad, by eight inches deep. In order to prevent a wash, the water must be taken out as smooth as possible.

The whole of the land enclosed is five hundred and sixty-four acres two roods, exclusive of the embankment, which is now covered with strong close herbage, affording excellent pasture for cattle, making the whole six hundred statute acres or thereabouts.

The whole cost £5,500.

The embankment hath now been completed fifteen months, and notwithstanding some very high rough tides during the winter, the repairs have not cost more than a few pounds.

About one hundred acres of this ground were in the spring of 1809, fenced in, ploughed and sown with oats, which produced forty-five Winchester bushels per acre.

Since the setting up of this embankment, the outside is very much filled up by the depositing of the sand, on the recess of the tide, many of the creeks and hollow places have filled not less than six feet, so that it is expected in the course of a few years other considerable tracts of marsh may be gained from the sea.

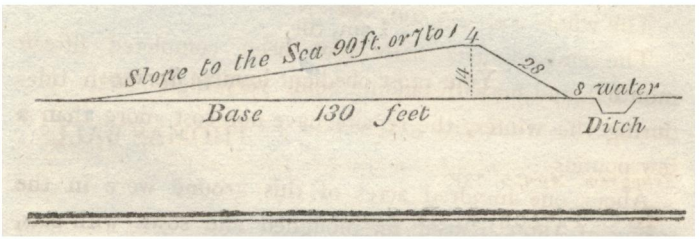
CERTIFICATES, in confirmation of the above statement were received from the Rev. J. BARTON, Rector of Oldingham, and one of his Majesty's Justices of the Peace for the County of Lancaster;

GEORGE BIGLAND, Esq. of Bigland Hall;
GEORGE BIGLAND, Jun. Esq. of Bigland Hall;
JAMES PENNY MACHELL, Esq. of Hollen Oak;

RICHARD

RICHARD MACHELL, Esq. of Ulverston;
REV. PETER RICHARDSON, Minister of Cartmel;
MR. WILLIAM HARRISON, Surgeon, of Ulverstone;
PUDSEY DAWSON, Esq. of Liverpool; and
JOHN WOODBURNE, Esq. of Lowich Hall.

Sketch of the Embankment on Windermoor, Lancashire.



The SILVER MEDAL *of the Society was this Session voted to* MR. THOMAS BALLS, *of Saxlingham, near Holt, Norfolk, for a Screw adjusting Plough. The following Communication was received from him; an Explanatory* ENGRAVING *is annexed, and a complete Model is preserved in the Society's Repository.*

SIR,

I HUMBLY offer, for the inspection of the Society, the model of a plough, constructed upon a principle on which I have made several.

Sir Jacob Astley, Bart has seen two at work on my farm, which I have constantly used, in different kinds of ploughing, for three years, and which, excepting in the share, have not cost me a shilling in repairs. Sir Jacob has ordered one to be made, and he being desirous that the plough should be more generally known, expressed a wish that I would send a model to the Society. If its mechanical principle proves to be of real utility to agriculturists, and superior to the ploughs in general use, I shall be highly gratified in my endeavors to promote the liberal views of the Society.

I am, Sir,

Your most obedient humble Servant,

THOMAS BALLS.

Saxlingham, April 5, 1810.

To C. TAYLOR, M. D. SEC.

CERTIFICATES FROM Sir JACOB HENRY ASTLEY, Bart.

DEAR SIR,

I HAVE seen Mr. Ball's plough worked against the common Norfolk plough, and find it much superior. It laid the furrow much better, more equal, and with much less draught to the horses, and has not wanted the usual repairs which the common ploughs are subject to. I make this observation from having had one in use for more than a year;

a year; and I find this plough much approved of by the farmers in this neighbourhood.

I remain, Dear Sir,

Your most obedient Servant,

J. H. ASTLEY.

Milton-Constable, May 3, 1810.

To C. TAYLOR, M. D. SEC.

SIR,

THE inclosed Certificate will I hope be satisfactory to the Society respecting my plough. It is a material improvement over the wheel-plough in common use in Norfolk, as it works with greater ease to the horses, on account of the line of draught being on a line with the angle of the horse's shoulders. It lays the furrow-slice particularly level, and cuts an even bottom-furrow. It is less liable to wear, on account of having less friction on the ground irons. It is particularly well calculated for breaking up stiff old land, and less liable to be put out of order than any plough generally used. By the adjusting screw, the furrow may be set from one to nine inches in depth, and secured by a lock to any of those intermediate depths with the greatest exactness. It may be easily converted into a swing-plough, by disengaging the axle-tree and wheels. Its beam may be made particularly light, on account of the line of draught laying so near the heel. I beg leave to inform the Society that the Earl of Thanet, in the year 1807, ordered two of these ploughs, and in 1809 six more of them. Mr. Burroughs, of Weasenham, intends to have all his ploughs on this plan; also

Mr. Wall, of Bayfield-lodge; Mr. Cobon, of Leatheringsett, will have two ploughs; and the Rev. T. Munnings has given orders for some to be made.

If I had not been so limited in time I could have sent you many more Certificates.

I am, Sir,

Your most obedient humble Servant,

THOMAS BALLS.

Saxlingham, May 6, 1810.

To C. TAYLOR, M.D. SEC.

CERTIFICATES were received from the following persons: viz. Mr. ROBERT WRIGHT, of Great Snoring, stating that he has three of Mr. Ball's ploughs, which he conceives to be much superior to the common plough, both in the execution of the work and easiness of draught.

Mr. MARK BARRET, Farming Steward to Sir George Chad, stating that he has three of Mr. Ball's ploughs; that they are the best he has ever made use of, and answer every purpose, both as a swing or wheel-plough.

Mr. THOMAS HURRELL, of Saxlingham, stating his opinion, that Mr. Ball's plough will come into extensive use, being an excellent plough for general purposes.

Mr. HENRY MAY WALLER, Farming-steward to Sir Jacob Henry Astley, Bart., stating, that he has two of Mr. Ball's ploughs in constant use; that he thinks them well calculated for strong work; and that they may be converted into a swing-plough, by disengaging the wheels.

Reference

Reference to the Drawing of Mr. Ball's Plough, Fig. 1. *Pl.* 2.

A is the beam of the plough carrying the coulter B, share D, and handle E; F is the mould board; the draught of the plough is taken by two iron rods G, connected at one end with a hook *a* in the beam A; and at the other with an iron bridle H by a swivel-bolt; this iron bridle has several notches to receive the draught-chain I, by means of which the point of traction is adjusted sideways; the adjustment for height, and in which the improvement consists, is made by an iron frame K, at the top of which a nut is placed acting upon a screw *d* fixed into the beam A; the axletree *e* of the wheels *ff* is connected with the iron rods G, by a bolt or pivot projecting from the end of them, which passes through the axletree; by these means the wheels always apply themselves to the inequalities of the ground without influencing the motion of the plough. The nut of the screw *d* being turned, raises or lowers the iron rods G, and elevates or depresses the point of traction, so that the plough will cut a greater or less depth of furrow.

The GOLD MEDAL *of the Society was this Session voted to Mr.* J. BAKER, *of West-Coker, near Yeovil, in Somersetshire, for an improved Implement for extirpating Docks and Thistles. The following Communication was received from him. An Explanatory Engraving is annexed, and one of the Implements preserved in the Society's Repository.*

SIR,

I HAVE sent to the Society an implement of my invention for destroying thistles and docks, which are two very injurious weeds to agriculturists.

The implement is so contrived, that if the root breaks in the claw, in attempting to draw it, you may, by turning the instrument, cut the root so far below the turf as to prevent its growth.

I am, Sir,

West-Coker, Oct. 31, 1809. Your obedient Servant,

To C. TAYLOR, M. D. SEC. JOHN BAKER.

CERTIFICATE.

We the undermentioned persons do hereby testify, that the instrument made by Mr. John Baker for destroying docks and thistles has been used to great advantage, and is likely to come into general use.

EDWARD GUPPY.
NATHANIEL BARTLETT.
THOMAS SANDFORD.
EDWARD PENNY.

Mr. J. Ball's Screw adjusting Plough.

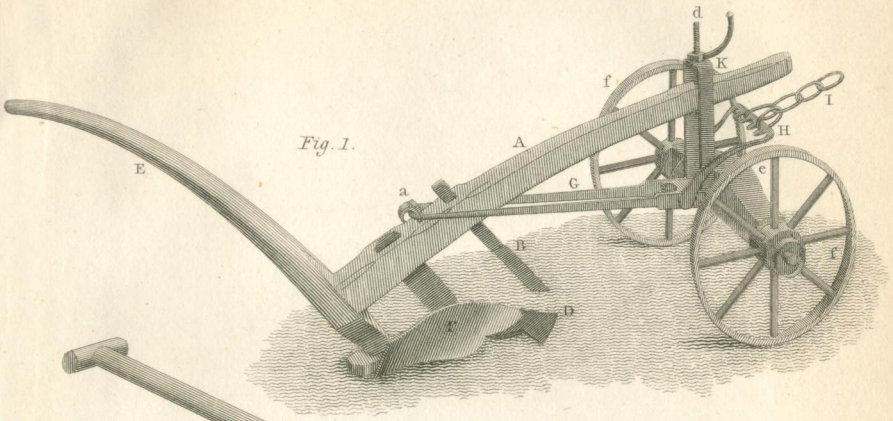


Fig. 1.

Fig. 2.

Mr. Baker's Thistle Extirpator.

Mr. Jeffery's Expanding Harrows.

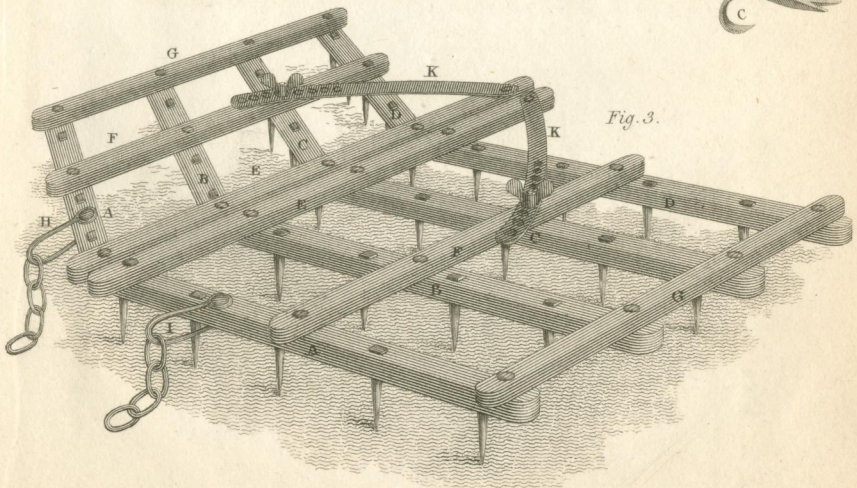


Fig. 3.

Drawn by J. Farey.

Engraved by S. Porter.

Description of Mr. J. Baker's Implement for extirpating Docks and Thistles, Pl. 2. Fig. 2.

Fig. 2 of Pl. 2, represents Mr. Baker's thistle-extirpator. A is the handle; B the claws, between which the thistle is received; the curved iron C is the fulcrum, over which the purchase to extract the weed is obtained; D is an iron rod, or bar, upon which the foot is placed to thrust the claws into the ground. In case the root of the weed breaks in endeavouring to extract it, the curved blade E, which has a sharp end like a chissel, is thrust into the ground to cut off the root of the thistle some inches below the surface, and prevent its vegetation.

The SILVER MEDAL *of the Society was this Session voted to Mr.* WILLIAM JEFFERY, *of Cotton-End, Northampton, for a Pair of Expanding Harrows, applicable both for cleaning foul Land, and harrowing in Seeds. The following Communication was received from him. An Explanatory Engraving is annexed, and a Model of the Harrow preserved in the Society's Repository.*

SIR,

I HAVE sent, for the Society's inspection, a model of a pair of harrows of my own invention, made to a scale of one inch and a half to a foot, and which are allowed to be a great improvement in these implements.

The

The improvement consists in their power of contraction or expansion, so as to cover an extent of land from five feet to ten feet; their teeth may be set at twelve different distances between them, and their tracks will always be at equal distances, according to the state of the land; they will either serve for harrowing in seeds, or cleaning foul land.

For cleaning foul land this harrow far exceeds any other yet made; for in such land the teeth ought to be at a greater distance in the first harrowing, and at the subsequent harrowings to be brought nearer together by degrees, till the teeth are brought very near together by contracting them. One pair of my harrows answer the purposes of three or more pairs made upon the old construction with fixed teeth.

My harrows are so constructed as to be contracted, or expanded, in two or three minutes, and the teeth, which are thirty-four in number, set at any equal distances required, having only two screws to confine them. This implement is more durable than other harrows, as there are no mortices or tenons in them to weaken the wood-work, or admit the rain, they are put together with iron nuts and screws.

They are also easier conveyed from field to field than other harrows, and when not in use will fold up in a small compass. I hope they will meet the Society's approbation, and be rewarded according to their merit.

I remain, Sir,

Your humble Servant,

WILLIAM JEFFERY.

Cotton-End, Northampton,
June 8, 1807.

To C. Taylor, M. D. Sec.

On

On the 31st of March, 1810, CERTIFICATES were received from Mr. JOHN RICE, Cotton-End; Mr. J. HAWKINS, Castle-Ashby; and Mr. WILLIAM SHAW, Hardingstone, to the following effect: viz.—That they had purchased of Mr. William Jeffery, and made perfect trials of his newly-invented expanding harrows, and find them to be upon a much superior principle to any they have seen, or made use of, before, and that they possess the following advantages:—

1. That by their contraction or expansion, as required, the teeth may be set at any equal distance, according to the state of the soil.

2. That they are much stronger and more durable than any other, as there is no mortice or tenon to weaken the wood-work, or harbour wet.

3. That they will fold up in a small compass, and are much easier to be moved about, and take up less room when out of use than any other harrows.

Reference to Mr. W. Jeffery's Expanding Harrows.

Fig. 3, Pl. 2, represents Mr. Jeffery's expanding harrow. It consists of two sets of moveable bars of wood, connected by hooks in one set, and eyes in the other. Each set is composed of four bars of wood, A B C D, furnished with teeth; these are connected, and held parallel to each other by three other bars, or braces, E F G, united to the former by screw-bolts; the iron loops H I are the points for the chains, by which they are drawn; K are two iron braces, joined to the bars E at one of their ends, and have a number of holes, any of which can be put over screw-pins fixed upon the middle bar F, provided with nuts;

nuts; when these nuts are removed, and the iron braces detached from their pins, the frames may be either closed up, or extended, so as to bring the teeth of the harrow nearer together, or remove them farther asunder, and they can be fastened at any point by the different holes in the iron braces, so as to be worked with the teeth at any requisite degree of extent.

The SILVER MEDAL *of the Society was this Session voted to Mr.* JOSEPH HUTTON, *Jun. of Ridgway, near Sheffield, for an improved Reaping-Hook for Corn. The following Communication was received from him, and the Implement preserved in the Society's Repository.*

SIR,

AT a time like the present, when all foreign supplies of grain are cut off, nothing can be more acceptable to the public than useful discoveries and improvements in agriculture. I am therefore anxious to contribute, in some degree, to that end, by sending some remarks on reaping the harvest, accompanied with my new-improved reap-hook.

I have, for the last eight years, had an opportunity of inspecting the different modes of reaping the harvest in many parts of Great Britain, and I have also had information on the subject from various parts of Europe and America on respectable authorities.

I will first endeavour to describe the different kinds of implements used for this purpose, some of them being employed

ployed in one part of the kingdom, and not in another. The sickle is of the greatest antiquity, though its use is now much upon the decline in England. It is almost in the form of a half circle, from twenty to thirty inches long, about three-fourths of an inch broad, with teeth cut in the edge from twenty to thirty in an inch, inclining from the handle to the point. The scythe is an instrument so generally known, as to need no description, further than that some are made longer, and others broader, as necessity or caprice requires.

The common reap-hook is a half-circular piece of iron and steel, from twenty to thirty inches long, about one inch and a half broad, and has a smooth even edge, like unto a scythe.

The badging or baging-hook is broader than the common reap-hook, particularly at the point, where it is most used, and straighter than the sickles, or reap hooks, generally are.

The reaping of wheat with the sickle is yet continued in Yorkshire, Durham, Westmorland, Cumberland, Lancashire, Warwickshire, Leicestershire, Northamptonshire, Rutland, Nottinghamshire, and part of Lincolnshire; it is performed by putting the sickle into the corn with the right hand, meeting it with the left hand, gathering the corn into the elbow of the sickle near the right hand, holding the corn fast with the left hand until it is cut, then the person repeats his cutting till he has obtained a large handful, which is generally one-third of a sheaf, which he lays in the straw-binding ready prepared.

The common reap-hook is used in the manner above specified, but its effects are far different, the sickle having a toothed-edge does not cut such stems as are not immediately collected into the left hand; for it is impossible to collect all where dispatch is required, particularly in thin straggling crops,

crops, for the teeth of the sickle being inclined, it is not so sharp in cutting from point to handle, as from handle to point, which is evident from a feel with the finger. The reap-hook, having a smooth even edge, cuts both ways alike, and cuts the straggled stems before they are collected into the gathering hand, consequently the loss of grain is great. The hook is allowed to perform its work with more ease than the sickle, which perhaps accounts for its now being so general, nothing else being used for cutting wheat in the following counties:—Cornwall, Devon, Dorset, Somerset, Monmouth, South-Wales, Hereford, Wilts, Hants, Berkshire, and part of the adjoining counties; it is also much used in Norfolk and Lincolnshire, also Northumberland, Westmoreland, and South of Scotland. It has lately been introduced into the North of Ireland by Irishmen who have laboured in Scotland, likewise into the Indies for cutting rice.

The badging-hook is used about London, and in the West of England, its work is performed by the man holding the hook in his right hand, and while, with the left, he reclines the stems intended to be cut upon the standing corn, which supports it when cut, he repeats his cutting from his right to his left hand, and collects it from his left to his right, which is almost a sheaf.

Badging is an expeditious mode of reaping; the corn is cut very low as if mown, and answers were straw is valuable; it may be said that badging produces more manure, from the greater quantity of straw collected; but in stiff clay lands a longer stubble is perhaps necessary to be left, to render the land lighter for the following crop. The badging-hook is also used for cutting oats in Lincolnshire and Staffordshire, and where labourers can be procured, is preferable to the scythe, being expeditious in its work, and less loss attending its

its use, the corn is gathered in straight regular order, which is not the case with the scythe; for the scythe requires at least two persons to follow it to bind the corn in sheaves, besides raking the stubble. The corn after the scythe lies in very irregular order, and holds more moisture in wet weather; besides, the scythe is destructive to the ripe corn, for its heavy stroke strips from the entangled stems the best and ripest grain.

The labourer seldom considers the interest of his employer, but generally uses such a tool as will do the work with most ease to himself.

I offer my improved reap-hook to the public, with a view to prevent the loss of grain, and at the same time to be used with ease by the labourer. It has a smooth edge like the reap-hook, from the handle of it towards its middle, where the corn is gathered; the other part has a toothed edge, like a sickle, and it will not scatter the corn so much as either of the other implements.

I shall furnish Certificates to show that I am the inventor of it, and that it has considerable advantages in general use. It is a great preserver of corn, in harvest, where it is straggled much from heavy rains.

I am, Sir,
Your obedient Servant,

JOSEPH HUTTON, JUN.

Ridgway, near Sheffield,
Oct. 17, 1809.

To C. TAYLOR, M. D. SEC.

The following CERTIFICATES were received.

A CERTIFICATE from Mr. J. TURNER, of Ridgway, dated October 3, 1809, stating, that in the year 1805 he

had made two dozen of improved reap-hooks by Mr. Hutton's instructions; that they were the first he ever knew to be made upon this plan, and that in the present year he and others have made thirty-five dozen for him.

A CERTIFICATE from WILLIAM TAYLOR, of Summit-Lodge, in Yorkshire, Bailiff to G. F. BURTON, Esq. dated September 29, 1809, stating, that after a few seasons experience, he finds Mr. Hutton's reap-hook preferable to any other, from the nature of its edge; that the labourers under his superintendance used all of this sort the last season, and that it is found to be a great saver of corn.

A CERTIFICATE from JOHN BOOTH, scythe, sickle, and reap-hook manufacturer, Ford Mills, near Sheffield, dated October 12, 1809, stating, that Mr. Hutton's reap-hook is certainly superior to the common one, and that public opinion confirms it as such, for there has been a great demand for them the two last harvests.

A CERTIFICATE from Mr. EDMUND LITTLEWOOD, of Dent Hall, near Dronfield, dated October 15, 1809, stating, that Mr. Hutton's reap-hook is superior to the common ones now in use, especially in the last harvest, in which the crops have been remarkably straggled, and bad to reap, owing to the heavy rains and winds.

That the common reap-hooks cut whilst putting in, before the gathering hand hath collected the stems together, and consequently many drop and are lost; which is not the case with Mr. Hutton's new-invented reap-hook, which doth not cut before the stems are collected together into the gathering hand.